High-resolution 13C record of fossil wood and bulk organic matter from a deep Oligocene lacustrine succession, Bach Long Vi Island, Vietnam

Rizzi, Malgorzata; Schovsbo, Niels Hemmingsen; Fyhn, Michael B.W.; Korte, Christoph

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08:00 - 12:20
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We present a high-resolution stable isotope record based on bulk organic matter ($\delta^{13}C_{org}$) and fossil wood ($\delta^{13}C_{wood}$) originating from Oligocene deep lacustrine sediments cored on the Bach Long Vi Island, northern Gulf of Tonkin, offshore Vietnam. The sediments are exceptionally well preserved. They are thus excellently suited for a detailed stratigraphical analysis of the stable isotope record and as proxy for environmental and climatic changes within this period.

The sediments were deposited in rapid subsiding, narrow and elongated fault-bound graben (Fyhn and Phach, 2015) and are represented by deep pelagic lacustrine organic-rich mud interrupted by numerous density-flow deposits (Hovikoski *et al.*, 2016). The density-flow deposits contain abundant fragments of fossil wood. Therefore it was possible to obtain 262 coalified wood fragments together with 1063 bulk organic samples throughout the span of the core. This allowed to establish a high resolution stable C isotope record ($\delta^{13}C_{org}$ and $\delta^{13}C_{wood}$). In addition 2464 handheld XRF determinations were carried out to further characterize the depositional environment (Rizzi *et al.*, 2017).

The organic carbon isotope trend from the 500 m core succession provides insight into the palaeoenvironmental changes of the lake during the Oligocene. Both, global and local factors control the $\delta^{13}C$ variations. The aim of the study is to obtain pure global $\delta^{13}C_{org}$ and $\delta^{13}C_{wood}$ signals that would allow comparison of the studied sediments with coeval syn-rift successions in the South China Sea region and other parts of the world.

[1] Fyhn and Phach (2015) Tectonics, 34(2): 290-312.

[2] Hovikoski et al. (2016) Journal of Sedimentary Research, 86(8): 982-1007.

[3] Rizzi et al. (2017) EGU General Assembly Abstract EGU 2017-17584.

Authors

Malgorzata Rizzi *
University of Copenhagen

Niels Hemmingsen Schovsbo
Geological Survey of Denmark and Greenland

Michael Bryld Wessel Fyhn
Geological Survey of Denmark and Greenland

Christoph Korte
University of Copenhagen

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